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rently forming the tumor. To explain this it is assumed that an anomalous artery connected the carotids at the point just below the chiasma, and this becoming aneurismal, caused the destruction of the chiasma, and forced its way into the brain substance above. The case is unique, and shows the partial crossing of the optic fibers in man, as well as the portions of the retina with which the two groups of fibers are respectively connected. Neither the optic nerves nor the brain were in a condition to permit of a microscopical examination. The paper closes with a discussion of the anomalous connecting branches observed in the circle of Willis, with a view to fully justifying the statement that the tumor was due to an aneurism in an anomalous artery.

*Zur Physiologie des Vogelgehirns.* M. E. G. SCHRADER. Pflüger's Archiv, XLIV, S. 175. Reviewed by Paneth in Centralbl. f. Physiol., März, 1889, No. 25.

This interesting paper opens with a discussion of previous investigations of the bird's brain, and has to urge against much that has been done, both the failure of the experimenters to treat the problems in a thoroughly objective way, and to control their results by suitable autopsies. It has been possible to remove the forebrain completely without injury to the remaining portions. The mortality immediately after operation is high, and of those that live for weeks after it, a portion show progressive emaciation and stupor, terminating in death. In the first days after operation the animals exhibit as a rule stupor and lack of voluntary motion, as described by Flourens. After this they move about the room, avoiding obstacles, even such as a dusty plate of glass, and can climb out of a cage with high sides. In the early stages they can easily be put to sleep by holding them or putting them on a perch, which shows that the movements are not forced. At night they roosted naturally. When placed on a rotating object they balanced very well for a time, and then flew off, evidently choosing the object towards which they flew. Alighting was accomplished with ease, but they could not rise from a flat surface like the floor. In some cases the period of stupor did not occur, and the animal moved about almost immediately after the operation in a way which showed that it could see fairly well from the very first. The reaction to sound was obtained with a percussion cap, by the explosion of which they were startled. The tests of other senses were not satisfactory, for Schrader did not get any good reactions on normal birds with which they could be compared. Birds without the forebrain did not eat voluntarily, but, as is well known, could swallow food fed to them. The operated birds slept, and became restless when left for too long a time without food. They showed heat, though they did not recognize the female, and a mother could not feed her young. The whole activity of such birds is reduced to the simplest terms.

Other birds were rendered blind. When the behavior of these was studied, it was found that they were in certain ways more defective than those without the forebrain. They could feed, but did so only at long intervals. They could not orient themselves, and remained for days resting on a perch, though it was close to the floor. The loss of sight evidently deprived them, as might be expected, of the majority of their most important sensations. So far as observed, no compensation through other senses took place.